

12/6/17

"Ask not what your country can do for you, ask what you can do for your country."-John F. Kennedy

HW: "Long Division of Polynomials" #5, 7, 9, 11, 13
 Test 2 on Tuesday 12/19

AIM: How do we do Polynomial Long Division?

Warm Up:

Divide 546 by 4 using long division.

$$\begin{array}{r}
 136 + \frac{2}{4} \\
 4 \overline{) 546} \\
 \underline{-4} \downarrow \\
 14 \downarrow \\
 \underline{-12} \downarrow \\
 26 \\
 \underline{-24} \\
 2
 \end{array}$$

$$\frac{546}{4} = 136 + \frac{2}{4}$$

$\frac{\text{Dividend}}{\text{Divisor}} = \text{Quotient} + \frac{\text{Remainder}}{\text{Divisor}}$

Divide using long division.

1. $(m^2 - 7m - 11) \div (m - 8)$

$$\begin{array}{r}
 m + 1 + \frac{-3}{m-8} \\
 \hline
 \textcircled{m} - 8 \overline{) m^2 - 7m - 11} \\
 \underline{-m^2 + 8m} \downarrow \\
 m - 11 \\
 \underline{-m + 8} \\
 -3 \leftarrow \text{remainder}
 \end{array}$$

$\frac{m^2}{m^1} = m$
 $\frac{m}{m} = 1$

$$\begin{array}{c}
 m + 1 + \frac{-3}{m-8} \\
 \text{OR} \\
 m + 1 - \frac{3}{m-8}
 \end{array}$$

$$n + 5 + \frac{-7}{n+5}$$

$$\begin{array}{r} \underline{n+5} \overline{) n^2 + 10n + 18} \\ \underline{-n^2 - 5n} \quad \downarrow \\ 5n + 18 \\ \underline{-5n - 25} \\ -7 \end{array}$$

$$\frac{n^2}{n} = n$$

$$\frac{5n}{n} = 5$$

$$n+5 + \frac{-7}{n+5}$$

6. $(a^2 - 28) \div (a - 5)$

$$\begin{array}{r}
 \text{a-5} \overline{) a^2 + 0a - 28} \\
 \underline{-a^2 + 5a} \\
 5a - 28 \\
 \underline{-5a + 25} \\
 -3
 \end{array}$$

$a + 5 + \frac{-3}{a-5}$

⊗ We need to include the 0 placeholder for any variable powers not seen in the dividend.

$$\begin{array}{r} 5 \overline{) 103.} \\ \uparrow \\ 13 \end{array}$$

$$5 \overline{) 13}$$

9. $(2x^2 - 17x - 38) \div (2x + 3)$

$$\begin{array}{r}
 \text{X} - 10 + \frac{-8}{2x+3} \\
 \hline
 2x+3 \overline{) 2x^2 - 17x - 38} \\
 \underline{-(2x^2 + 3x)} \quad \downarrow \\
 -20x - 38 \\
 \underline{-(-20x - 30)} \\
 -8
 \end{array}$$

$$\frac{2x^2}{2x} = x$$

$$\frac{-20x}{2x} = -10$$

$$\frac{-8}{2x+3}$$

16. $(40x - 13x^2 + x^3 + 18) \div (x - 7)$

$$\begin{array}{r}
 x^2 - 6x - 2 + \frac{4}{x-7} \\
 \hline
 \begin{array}{r}
 \underline{x-7} \overline{) x^3 - 13x^2 + 40x + 18} \\
 \underline{-(x^3 - 7x^2)} \quad \downarrow \\
 -6x^2 + 40x \\
 \underline{-(-6x^2 + 42x)} \quad \downarrow \\
 -2x + 18 \\
 \underline{-(-2x + 14)} \\
 \textcircled{4}
 \end{array}
 \end{array}$$

$$-\frac{6x^2}{x} = -6x$$

$$20) (10k^2 - 35k + 50k^3 - 7) \div (-4 + 5k)$$

$$\begin{array}{r}
 \text{Quotient: } 10k^2 + 10k + 1 + \frac{-3}{5k-4} \\
 \hline
 \begin{array}{r}
 \underline{5k-4} \overline{) 50k^3 + 10k^2 - 35k - 7} \\
 \underline{-(50k^3 - 40k^2)} \downarrow \\
 50k^2 - 35k \\
 \underline{-(50k^2 - 40k)} \downarrow \\
 5k - 7 \\
 \underline{-(5k - 4)} \\
 -3
 \end{array}
 \end{array}$$

$$11) (n^4 + 4n^3 + n^2 - 3n) \div (n^2 - 1)$$

$$\begin{array}{r} \textcircled{n^2} + 0n - 1 \overline{) n^4 - 3n^3 + n^2 + 4n + 0} \end{array}$$

HW: 1, 3, 5, 7, 11[Ⓚ]

$$015 \overline{) 2132}$$